CLAIMS

1. A method for fabricating a scanning probe microscope probe, comprising:

forming a structural layer on a substrate,

wherein the substrate forms a cavity, and a sacrificial layer is located between the substrate and the structural layer.

2. The method of claim 1 further comprising selectively removing the sacrificial layer.

3. The method of claim 2 further comprising releasing the structural layer from the substrate.

4. The method of claim 3, wherein the structural layer forms a probe having a tip and a cantilever beam connected with the tip.

5. The method of claim 1, wherein the cavity forms a pyramid.

6. The method of claim 1, wherein the cavity forms a bottom, and the bottom is generally flat.

7. The method of claim 1, wherein the structural layer includes a tip layer in the cavity and a beam layer on the tip layer.

8. The method of claim 7, wherein the tip layer comprises an elastomer.

9. The method of claim 7, wherein the tip layer comprises a first material and the beam layer comprises a second material, wherein the first material is different from the second material.

10. The method of claim 1, wherein the sacrificial layer comprises one of a metal, an oxide, and a polymer.

11. A method for fabricating a scanning probe microscope probe, comprising:

forming a structural layer on a substrate, the structural layer having a tip layer and a beam layer,

wherein the substrate forms a cavity, the tip layer is in the cavity, the beam layer is on the tip layer, and a sacrificial layer is located between the substrate and the tip layer; and

patterning the structural layer.

12. The method of claim 11, wherein the sacrificial layer is located between the substrate and the beam layer.

13. The method of claim 12, wherein the tip layer comprises one of a metal, an oxide, and a polymer.

14. The method of claim 11 further comprising forming an adhesion island on the structural layer.

15. The method of claim 14 further comprising placing a handle on the adhesion island.

16. The method of claim 15, wherein the adhesion island is bonded with the handle and the structural layer.

17. The method of claim 11 further comprising releasing the structural layer from the substrate.

18. A scanning probe microscope probe formed by the method of claim 1.

19. A scanning probe microscope probe formed by the method of claim 11.

20. The method of claim 11 further comprising sharpening the tip.

21. A scanning probe microscope probe comprising:

a tip comprising a first material;

a cantilever beam connected with the tip, the cantilever beam comprising a second material,

wherein the first material comprises one of a metal, an oxide, and a polymer, and the second material comprises one of a metal, an oxide, and a polymer.

22. The scanning probe microscope probe of claim 21, wherein the tip has a height of between 1 and 10 microns.

23. The scanning probe microscope probe of claim 21, wherein the cantilever beam has a length of between 100 and 1000 microns.

24. The scanning probe microscope probe of claim 21 further comprising an adhesion island connected with the cantilever.

25. The scanning probe microscope probe of claim 24 further comprising a handle connected with the adhesion island.

26. A method for contact printing comprising:

positioning a scanning probe microscopy probe having a tip near a substrate, wherein ink is transferred from the tip to the substrate, and wherein the tip comprises a polymer.

27. The method of claim 26 further comprising mounting the probe to a scanning probe microscope.

28. The method of claim 27 further comprising inking the probe before mounting the probe.

29. The method of claim 27 further comprising inking the probe after mounting the probe.

30. The method of claim 26 further comprising forming the probe by forming a structural layer on a substrate, wherein the substrate forms a cavity, and a sacrificial layer is located between the substrate and the structural layer.

31. The method of claim 30 further comprising selectively removing the sacrificial layer.

32. The method of claim 30 further comprising releasing the structural layer from the substrate.

33. The method of claim 30, wherein the cavity forms a pyramid.

34. The method of claim 30, wherein the structural layer includes a tip layer in the cavity and a beam layer on the tip layer.

35. The method of claim 34, wherein the tip layer comprises an elastomer.

36. A method for contact printing comprising:

patterning a first ink on a flat surface of a scanning probe microscopy probe to form an ink pattern on the flat surface; and

positioning the flat surface near a first substrate, wherein the ink pattern is transferred from the flat surface to the first substrate.

37. The method of claim 36, wherein the flat surface comprises a polymer.

38. The method of claim 36, wherein the ink pattern is transferred from the flat surface to the substrate a plurality of times.

39. The method of claim 36 further comprising positioning the flat surface near a second substrate, wherein the ink pattern is transferred from the flat surface to the second substrate.

40. The method of claim 36 further comprising patterning a second ink on the flat surface.

41. The method of claim 40, wherein the first ink and the second ink comprise the same material.

42. The method of claim 40 further comprising forming the probe using the method of:

forming a structural layer on a substrate, the structural layer having a tip layer and a beam layer,

wherein the substrate forms a cavity, the tip layer is in the cavity, the beam layer is on the tip layer, and a sacrificial layer is located between the substrate and the tip layer; and

patterning the structural layer.

43. The method of claim 36, wherein the ink pattern comprises more than one pixel.